

The Genus *Phorticella* Duda (Diptera: Drosophilidae) from Burma and Southern China¹

SOE WYNN², MASANORI J. TODA³ and TONG XU PENG⁴

*Laboratory of Genetics, Department of Biology, Tokyo Metropolitan University,
Setagaya, Tokyo 158, Japan, ³Institute of Low Temperature
Science, Hokkaido University, Sapporo 060, Japan, and*

*⁴Guangdong Institute
of Entomology, Guangzhou, China*

ABSTRACT—Three new species of the genus *Phorticella* Duda are reported from Burma and southern China, along with collection records of two known species from Burma.

INTRODUCTION

Okada and Carson [1] resolved the taxonomical confusion among the genera *Phorticella* Duda, *Zaprionus* Coquillett, and the *Drosophila lineosa* subgroup of the *D. immigrans* species-group, all of which are characterized by silvery or chalky white longitudinal stripes on frons and mesoscutum. They included six Oriental, New Guinean and/or Australian species in the genus *Phorticella*, and classified those species into two subgenera, *Phorticella* Duda and *Xenophorticella* Okada et Carson. On the other hand, Okada and Carson [1] and Bock [2] pointed out some affinities between the subgenus *Phorticella* and the subgenus *Scaptodrosophila* Duda of the genus *Drosophila* Fallén. However, taxonomical revision of these subgenera awaits comprehensive phylogenetical analyses including the whole subgenus *Scaptodrosophila*, which is a quite large subgenus including a total of 229 species.

The present paper deals with 3 new species of the genus *Phorticella* from Burma and southern China, along with collection records of 2 known species from Burma.

Genus *Phorticella* Duda

Phorticella Duda, 1923, Ann. Hist.-nat. Mus. Natn. Hung., 20: 36.—Okada and Carson [1], 540. Type species: *Drosophila bistriata* de Meijere, 1911.

Diagnosis. Anterior reclinate orbital usually fine, posterior reclinate near to proclinate than to inner vertical. Epandrium truncate below. Novasternum with 2 or 3 pairs of long submedian spines.

Subgenus *Phorticella* Duda

Phorticella: Okada and Carson [1], 540.

Diagnosis. Frons laterally with broad, silvery white, longitudinal stripes, but without median stripe. Third antennal joint white, except for Australian *Ph. albostrata* (Malloch, 1924) [3]. Tarsi of mid and hind legs without minute cuneiform bristles. Prescutellars absent. Mid sternopleural minute. Male genitalia closely resemble those of *D. (Scaptodrosophila)* species [2].

Other characters commonly seen in the following 3 new species are first described below.

Head: Eye with pile. Second antennal joint brown. Arista with *ca.* 4 upper and *ca.* 2 lower branches in addition to terminal fork. Frons slightly broader than long, with some frontal hairs. Carina low, narrow. Cheek narrow.

Legs: Preapicals on all tibiae; apicals on fore and mid tibiae.

Accepted April 28, 1989

Received March 31, 1989

¹ Drosophilidae (Diptera) in Burma, V.

² Present address: 554 (c), Nei-bain-da road, Nan-tha-gone quarter, Insein township, Insein post office, Yangon Division (Rangoon), Union of Myanmar (Burma).

Wing: R_{2+3} straight; R_{4+5} and M nearly parallel. Haltere white.

Periphallic organs: Epandrial heel prominently protruded; toe round. Cercus separated from epandrium, nearly entirely pubescent. Surstylus somewhat semicircular in caudal view.

Phallic organs: Posterior parameres(?) medially fused to each other.

Phorticella (Phorticella) tortia Wynn

et Toda, sp. nov.

(Fig. 1)

♂, ♀. Body length, ♂ *ca.* 2.2 mm, ♀ *ca.* 2.3 mm. Thorax length (including scutellum) *ca.* 1.1 mm in both sexes.

Head: Eye brownish red. Frons yellowish brown; periorbit dark brown, narrow, restricted to upper half of frons; ocellar triangle dark brown. Anterior reclinate orbital *ca.* 1/3 length of posterior reclinate; proclinate slightly longer than posterior reclinate. Face and cheek yellowish brown; carina brown. Clypeus brown. Cheek *ca.* 1/10 as broad as maximum diameter of eye. Second oral weak, *ca.* 1/2 length of vibrissa. Palpus yellowish white, with *ca.* 5 bristles aligned laterally; terminal bristle longest.

Thorax: Mesoscutum brownish yellow, medially with broad, dark brown, longitudinal stripe which is laterally bordered by slightly silvery yellow stripe from anterior margin to level of anterior dorsocentrals and is broadened between dorsocentrals. Scutellum dark brown, anterolaterally yellowish, apically white. Thoracic pleura brown. Humeral 2. Acrostichal hairs in 6 rows. Anterior dorsocentral *ca.* 3/5 length of posterior; cross distance of dorsocentrals *ca.* 3 times length distance. Anterior/posterior scutellar *ca.* 7/10. Distance from posterior scutellar to anterior almost equal to distance between posteriors. Sternoindex *ca.* 0.8.

Legs brownish yellow; coxae and fore femur darker. Fore metatarsus slightly longer than 2 succeeding tarsal joints together; mid and hind metatarsi as long as 3 succeeding together.

Wing hyaline. Veins brownish yellow; costa slightly clouded at 2nd break; crossveins clear. C1-bristles 2; ventral one weak. Wing indices: C

ca. 1.8, 4V *ca.* 2.6, 4C *ca.* 1.7, 5x *ca.* 2.0, Ac *ca.* 2.4, C3-fringe *ca.* 0.6.

Abdomen: First tergite entirely pale yellow; 2nd laterally with 1 pair of dark brown patches; 3rd and 4th in ♂ and 3rd to 5th in ♀ with broad, dark brown, caudal band medially and laterally protruded; 5th and 6th in ♂ and 6th in ♀ entirely dark brown. Sternites yellowish white.

Periphallic organs (Figs. 1A, D): Epandrium pubescent except anterior and ventral marginal portions, with *ca.* 16–20 bristles; caudoventral part lobular. Surstylus with *ca.* 13 primary teeth on concave distal margin, several small bristles on caudoventral portion and many long spines on inner surface. Cercus narrow, with *ca.* 25 bristles. Decasternum rhomboidal, medially sparsely pubescent (Fig. 1D).

Phallic organs (Figs. 1B, C): Aedeagus laterally hirsute, shaped like torch in lateral view (thus the species name), dorsally bilobed and with 1 pair of small, triangular, marginally serrate flaps; apodeme broad, slightly longer than aedeagus. Anterior paramere long, curved ventrad, apically slightly expanded and round, dorsomedially sparsely hirsute, with *ca.* 9 sensilla aligned along nearly entire length on outer surface. Novasternum somewhat quadrate, broader than long, concave on anterior margin, with 3 pairs of submedian spines on caudal margin; base of submedian spines expanded, forming small lobe.

♀ reproductive organs: Ovipositor (Fig. 1E) apically blunt, with *ca.* 1 bristle-like discal, *ca.* 5 somewhat long apical and *ca.* 16 marginal teeth, and 1 long subterminal and 3 small terminal hairs. Spermatheca (Fig. 1F) broader than long, somewhat quadrangular in lateral view; duct slightly constricted medially in introvert.

Holotype ♂, Burma: Pyin Oo Lwin, 30.XII.1981–6.I.1982, ex trap (Toda); deposited in Entomological Institute, Hokkaido University, Sapporo, Japan (EHU). Paratypes, Burma: 7 ♂, 17 ♀, same data as holotype; in EHU and the collection of senior author (S.W.).

Distribution. Burma (Pyin Oo Lwin).

Relationship. This species is somewhat similar to *Ph. singularis* (Duda, 1924) in having 6 rows of acrostichal hairs, but clearly distinguishable from the latter by color patterns on thorax and legs [1,

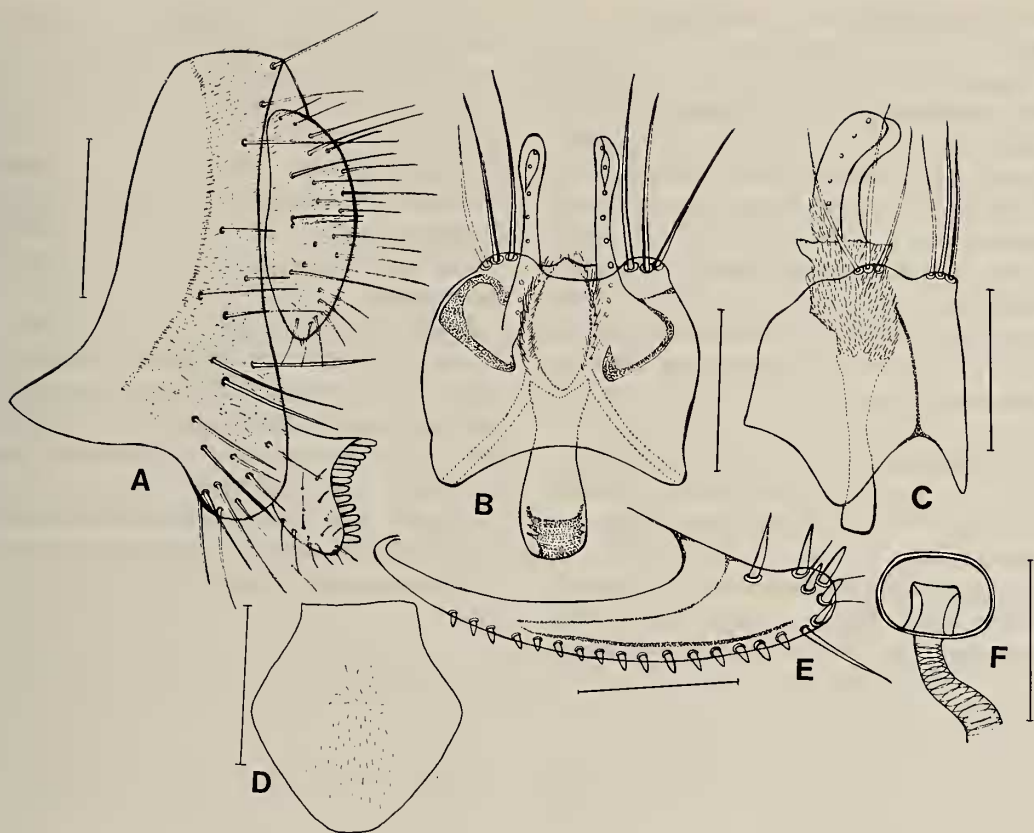


FIG. 1. *Phorticella (Phorticella) tortia* Wynn et Toda, sp. nov. A: Periphallic organs, B: phallic organs (ventral view), C: ditto (lateral view), D: decasternum, E: ovipositor, F: spermatheca. (Scale-line=0.1 mm.)

Fig. 1E] and having 3 pairs of submedian spines on novasternum (2 pairs in *Ph. singularis*).

***Phorticella (Phorticella) htunmaungi* sp. nov.**
(Fig. 2)

This species is very close to the foregoing species, *Ph. tortia*. The following description is made referring only to the differences from the latter.

♂, ♀. Body length, ♂ *ca.* 2.2–2.3 mm, ♀ *ca.* 2.3–2.8 mm. Thorax length, ♂ *ca.* 1.0 mm, ♀ *ca.* 1.1 mm.

Head: Anterior reclinate orbital *ca.* 1/4–1/3 length of posterior reclinate; proclinate as long as posterior reclinate. Carina pale yellow. Cheek width *ca.* 1/10 maximum diameter of eye. Second oral *ca.* 1/3–1/2 length of vibrissa.

Thorax: Mesoscutum dark brown, patterned

as follows: 1 pair of broad, slightly silvery shining pale brown stripes appearing to continue from frontal white stripes and extending posteriorly to level of anterior dorsocentrals; narrow yellowish stripes present medially and along dorsocentral lines; yellowish patches present laterally. Scutellum dark brown, laterally black. Thoracic pleura dark brown. Anterior dorsocentral *ca.* 7/10 length of posterior; cross distance of dorsocentrals *ca.* 2.5–3.3 times length distance. Anterior/posterior scutellar *ca.* 7/10–4/5; posteriors slightly more distant from each other than from anterior. Sterno-index *ca.* 0.7.

Wing indices: C *ca.* 1.7–2.0, 4V *ca.* 2.4–2.9, 4C *ca.* 1.4–1.8, 5x *ca.* 1.9–2.3, Ac *ca.* 2.0–2.3, C3-fringe *ca.* 0.5–0.6.

Abdomen: Second to 4th tergites pale yellow, sublaterally with 1 pair of large or small, dark

brown patches; 5th in ♀ with 3 dark brown patches.

Periphallic organs (Figs. 2A, D): Epandrium with *ca.* 18–20 bristles. Cercus with *ca.* 20 bristles. Decasternum medially densely haired (Fig. 2D).

Phallic organs (Figs. 2B, C): Aedeagus dorsally with small, marginally serrate flap somewhat variable in shape; apodeme as long as aedeagus. Anterior paramere heavily hirsute medially to subapically on dorsal margin, with *ca.* 12 sensilla. Novasternum medially slightly notched and sublaterally with 3 pairs of submedian spines on caudal margin; base of submedian spines not so expanded.

♀ reproductive organs: Ovipositor (Fig. 2E) with *ca.* 5–6 apical and *ca.* 15–18 marginal teeth. Spermatheca (Fig. 2F) hemispherical; introvert slightly annulate.

Holotype ♂, Burma: Pyin Oo Lwin, 30.XII.1981–6.I.1982, ex trap (Toda); in EHU. Paratypes, Burma: 9♂, 4♀, same data as holotype;

pe; in EHU and S.W. China: 1♂, 1♀, Conghua, Guangdong Province, 27.I.1987, by sweeping on tree trunks and forest floor (Toda); Dinghushan, Guangdong Province, 1♀, 5–13.VII.1986, 1♀, 21–27.VII.1986, 1♀, 20–25.II.1987, 2♀, 14–23.V.1987, ex traps (Peng); in the Guangdong Institute of Entomology, Guangzhou, China (GIE) and EHU.

Distribution. Burma (Pyin Oo Lwin), China (Guangdong).

Relationship. As mentioned above, this species is closely related to the foregoing species, *Ph. tortia*, but can be distinguished from the latter by color patterns on thorax and abdomen, denser hairs on anterior paramere and decasternum, and unexpanded base of submedian spines.

Remarks. This species is named in honor of Dr. Htun Maung, the Emeritus Professor of Zoological Department and the Rector of Mandalay University.

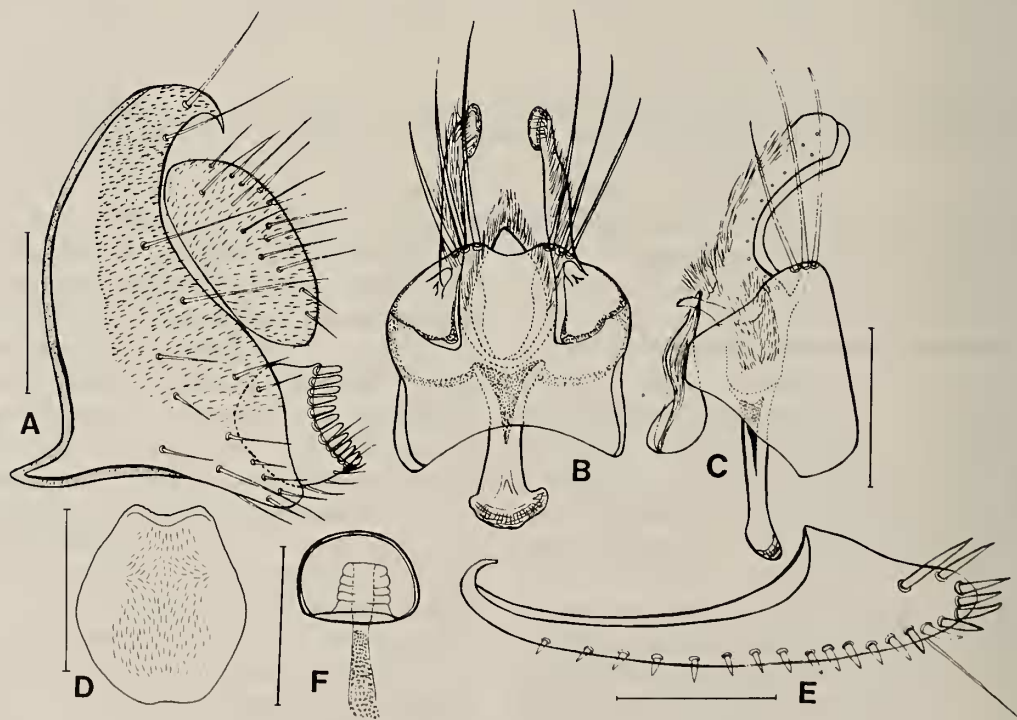


FIG. 2. *Phorticella (Phorticella) htunmaungi* sp. nov. A: Periphallic organs, B: phallic organs (ventral view), C: ditto (lateral view), D: decasternum, E: ovipositor, F: spermatheca. (Scale-line=0.1 mm.)

Phorticella (Phorticella) nullistriata sp. nov.
(Fig. 3)

♂, ♀. Body length, ♂ *ca.* 2.25 mm, ♀ *ca.* 2.5 mm.

Head: Eye dark red. Frons brown. Carina brown. Clypeus black. Cheek *ca.* 1/20 as broad as maximum diameter of eye. Second oral *ca.* 1/3 length of vibrissa. Palpus grayish white, with *ca.* 3 bristles aligned laterally; terminal bristle longest.

Thorax black, shiny. Mesoscutum without whitish longitudinal stripes (thus the species name). Scutellum laterally dark, apically milky white. Humerals 2, unequal. Acrostichal hairs in 8 rows. Cross distance of dorsocentrals *ca.* 2.4–3.7 times length distance. Anterior/posterior scutellar *ca.* 9/10; posteriors slightly more distant from each other than from anterior. Sterno-index *ca.* 0.8.

Legs: All femora blackish brown, tibiae and tarsi whitish yellow.

Wing somewhat fuscous. C1-bristle 1. Wing indices: C *ca.* 1.6–2.0, 4V *ca.* 2.7–3.0, 4C *ca.* 1.5–1.7, 5x *ca.* 2.5–3.5, Ac *ca.* 2.1–2.5, C3-fringe *ca.* 0.5.

Abdomen: First tergite yellow; 2nd and 3rd in

♂ and 2nd to 5th in ♀ medially yellow, laterally black; 4th to 6th in ♂ entirely black and subshining. First to 3rd sternites yellowish white, 4th to 6th gray or black in ♂; 1st to 6th yellowish white, 7th black in ♀.

Periphallic organs (Figs. 3A, D): Epandrium pubescent except anteroventral portion, with *ca.* 3 bristles on upper part and *ca.* 14 on lower part; anterior and posterior margins nearly parallel. Surstylus with *ca.* 12 primary teeth (upper *ca.* 5 blunt and slightly longer than rest), *ca.* 3 minute bristles at ventral corner and *ca.* 4 minute ones on inner surface. Cercus somewhat oblong, with *ca.* 13 bristles. Decasternum consisting of 2 parts; ventral plate rectangular; dorsal part shirt-like in ventral view (Fig. 3D).

Phallic organs (Figs. 3B, C): Aedeagus hairy, pointed in both ventral and lateral views. Anterior paramere finger like, with a few sensilla aligned in oblique row basally on outer surface. Novasternum hexagonal, with 2 pairs of submedian spines; inner pair much longer than outer pair.

♀ reproductive organs: Ovipositor (Fig. 3E) grayish, apically round, with *ca.* 1 discal, *ca.* 6 apical (ultimate one especially long), *ca.* 10 mar-

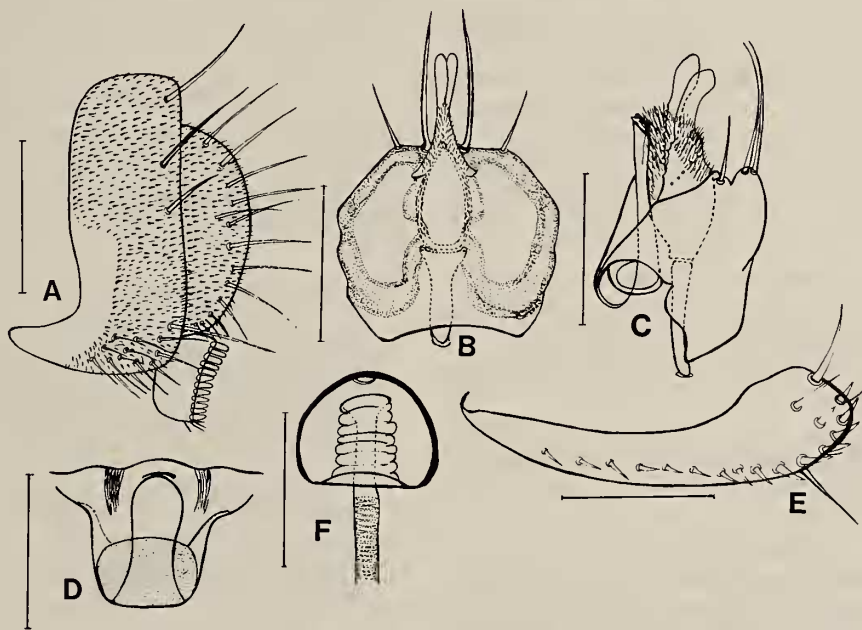


FIG. 3. *Phorticella (Phorticella) nullistriata* sp. nov. A: Periphallic organs, B: phallic organs (ventral view), C: ditto (lateral view), D: decasternum, E: ovipositor, F: spermatheca. (Scale-line=0.1 mm.)

ginal teeth, and 1 long subterminal and *ca.* 2 small terminal hairs. Spermatheca (Fig. 3F) black, umbrella-shaped, apically slightly indented; introvert deep, annulate.

Holotype ♂, China: Guanzhou, Guangdong Province, 23.IX.1986 (Peng); in GIE. Paratypes, China: 3 ♂, 7 ♀, same data as holotype; 1 ♀, same data as holotype except 21–29.XI.1985; 1 ♀, Dinghushan, Guangdong Province, 24.XI–1.XII.1986 (Peng); in GIE and EHU.

Distribution. China (Guangdong).

Relationship. This species certainly belongs to the subgenus *Phorticella*, because of having white 3rd antennal joint and lateral silvery white longitudinal stripes on frons, but is unique in having no whitish longitudinal stripes on mesoscutum.

Phorticella (Phorticella) bistriata (de Meijere)

Drosophila bistriata de Meijere, 1911, Tijdschr. Ent., **54**: 397 (Java).

Phorticella bistriata: Duda, 1924, Arch. Naturg., **90**(A): 182 (Java).

Phorticella (Phorticella) bistriata: Okada and Carson [1], 540 (Sumatra, Burma).

Zaprionus albicornis Enderlein, 1922, Deutsch. ent. Zeitschr., **1922**: 295 (syn. by Duda, 1926, Suppl. Ent., **14**: 45) (Taiwan).

Drosophila albicornis: Lin and Tseng, 1973, Bull. Inst. Zool. Acad. Sinica, **12**: 22 (Taiwan).

Phorticella fenestrata Duda, 1923, Ann. Hist.-nat. Mus. Natn. Hung., **20**: 36 (as var. of *bistriata*) (Taiwan).

Specimens examined. Burma: 1 ♀, Pyin Oo Lwin, 30.XII.1981–6.I.1982, ex trap (Toda); 5 ♂, 2 ♀, Mandalay, 26.XII.1981–4.I.1982, ex traps (Toda); 1 ♂, 1 ♀, Mandalay, 31.XII.1981, by sweeping on tree trunks (Toda); 2 ♂, Shwebo, 2, 3.I.1982, by sweeping on tree trunks (Toda); 13 ♂, 8 ♀, Rangoon, 18, 22.XII.1981, 9, 10, 13, 14.I.1982, by sweeping at ditches and on tree trunks (Toda).

Distribution. China (Taiwan, Guangdong), Java, Sumatra, Burma (Pyin Oo Lwin, Mandalay, Shwebo, Rangoon).

Subgenus *Xenophorticella* Okada et Carson

Xenophorticella Okada et Carson [1], 542. Type species: *Zaprionus flavipennis* Duda, 1929.

Diagnosis. Frons with median, longitudinal, whitish stripe in addition to lateral ones. Third antennal joint gray. Tarsi of mid and hind legs with minute cuneiform bristles.

Phorticella (Xenophorticella) flavipennis (Duda)

Zaprionus flavipennis Duda, 1929, Treubia, **7**: 416 (Buru Is.).

Phorticella flavipennis: Wheeler, 1981, Genetics and Biology of *Drosophila*, **3a**: 73.

Phorticella (Xenophorticella) flavipennis: Okada and Carson [1], 543 (Ryukyu Is., India, Singapore, New Guinea).

Drosophila (Hirtodrosophila) bicolorvitata Singh, 1974, Zool. J. Linn. Soc., **54**: 162 (India).

Phorticella striata Sajjan et Krishnamurthy, 1975, Orient. Ins., **9**: 118 (India).

Phorticella carinata Takada, in Takada and Maki-no, 1981, J. Fac. General Educ. Sapporo Univ., (19): 31 (Ryukyu Is.).

Specimens examined. Burma: 1 ♂, 1 ♀, Pyin Oo Lwin, 30.XII.1981–6.I.1982, ex trap (Toda); 8 ♂, 1 ♀, Mandalay, 26.XII.1981–6.I.1982, ex traps (Toda).

Distribution. Ryukyu Is., China (Taiwan, Guangdong), Singapore, Burma (Pyin Oo Lwin, Mandalay), India, New Guinea, Moluccas (Buru Is.).

ACKNOWLEDGMENTS

This work was supported by a Grant-in-Aid for Overseas Scientific Survey from the Ministry of Education, Science and Culture, Japan (Nos. 56041049, 57043044, 60041061, 61043056, 62041085).

REFERENCES

- Okada, T. and Carson, H. L. (1983) The genera *Phorticella* Duda and *Zaprionus* Coquillett (Diptera, Drosophilidae) of the Oriental Region and New Guinea. Kontyû, Tokyo, **51**: 539–553.
- Bock, I. R. (1982) Drosophilidae of Australia. V. Remaining genera and synopsis (Insecta: Diptera). Aust. J. Zool., Suppl. **89**: 1–164.
- Bock, I. R. (1976) Drosophilidae of Australia. I. *Drosophila* (Insecta: Diptera). Aust. J. Zool., Suppl. **40**: 1–105.